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**DEPRECIATION OF CURRENCY AND ITS IMPACT ON EMERGING STOCK MARKET RETURNS-
THE CASE OF DOLLAR DEPRECIATION**

A dissertation submitted in partial fulfilment of the requirements of the Royal Docks Business
School, University of East London for the degree of **MBA FINANCE**

MAY 2014

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DEPRECIATION OF CURRENCY AND ITS IMPACT ON EMERGING STOCK MARKET RETURNS- THE CASE OF DOLLAR DEPRECIATION

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ABSTRACT

The research is focused on the impact of the dollar depreciation on the emerging market returns. The research was carried out using monthly observations over the life period of 2000 to 2013 from six emerging market countries where stock market indices and exchange rates monthly data's were used. The monthly data was further compounded to get the returns. The researcher uses linear regression model to analyse the impact of dollar depreciation on emerging stock market returns .The evidence shows that the dollar depreciation had a positive impact on the returns of the emerging markets except for Greece. Hence, this research suggests that the international fund managers who are seeking to invest in the emerging markets should evaluate the value and stability of their currency before making an investment decision.

CHAPTER 1

1.1 INTRODUCTION

The integration of financial markets globally has paved a way for currency depreciation to have an impact on the stock prices. The fall of the economic crisis is evident to say that the financial market and the stock market share an inevitable relation which cannot be ignored. Pan et al.(2007) studies reflect that the financial market and the stock market play a vital role in the development of an economy. Large and discrete currency movements is not uncommon event in many emerging markets. There is no clear definition of what constitutes an emerging stock market (Bilson , Brailsford and Hooper, 2007). However, emerging markets tend to have faster economic growth that gives the investors to prospect high returns.

This research describes the emerging market in brief with basic differences between devaluation and depreciation and hence relate it other topics of the literature.Further, the researcher provides little information on the trade balance through a J-Curve effect as balance of trade is evident to provide

investors with valuable information about the country's economy. Further, the research explores the various factors affecting stock returns as different factors tend to create a different impact. However, since this research is focused on changes in the currency and how it affects the stock returns, Above all, the research will be supported with empirical results to observe the changes in the stock market returns following a depreciation in dollar currency and the local markets being further compared to US market. The outcomes of the results will then be analysed with the previous findings from the literature to highlight possible reasons on why such results were observed. In the end, the research will be concluded focusing on the main highlights of the research and necessary recommendations will be given. The research would not be further complete without highlighting its limitations that the researcher would face during the research period.

1.2 BACKGROUND OF THE STUDY

Emerging markets are found to be more riskier in comparison to developed markets as it brings along additional risks such as political, economic and currency movement etc they bear(Graham, Kiviaho and Nikkinen,2012). However it is to be known that stock markets can be categorised as emerging through the listing adopted by the International Finance Corporation(Emerging Markets Factbook,1997).Significant changes in the exchange rate market has been observed since the adoption of the floating exchange rate regime from the early 1970's. This regime is said to be determined through the market forces depending on the demand and supply of currency. On the contrary, in a fixed exchange rate regime governments and banks often intervene in the currency market to ensure that the exchange rate stays close to the target. Exchange rate between two countries is the price at which residents of those countries trade with each other. The exchange rate regimes plays a major role in determining the value of the exchange rate in comparison to other currencies. There has been significant growth in the international trade and high integration of the

financial markets in which exchange rates are regarded as one of the key factors that tends to influence the business revenue and the stock prices(Kim,2003). Similarly when a currency depreciates or appreciates it tends to cause an impact over the demand and supply of money in terms of imports and exports trades. Further, the changes in the currency has the tendency to create a huge impact on the financial and the stock market . Moreover, it is a known fact that investors invest in stocks that would provide them with more returns. In general, stock return is the return generated after capital investment is made in the stock market for a particular period of time which could initially provide them with profits or losses. Similarly, However, it is to be noted that different results might be observed based upon the type of exchange rate regime the country follows and the degree of capital control. Moreover, investors today feel the need to develop forecasts of their asset returns and the volatility until their holding period which is why the importance of modeling conditional means and variances have become increasingly significant.

US DOLLAR ECONOMY

The US dollar is often used in most of the international transactions and hence the weakening of the dollar currency is surely to have an impact on all other countries. The stabilisation of the dollar currency is highly essential. The economy of the United states is known to have a mixed economy. However, the US economy today faces major challenges as a result of both local and international factors.

1.3 PROBLEM STATEMENT

In emerging stock market, investors have the various investment vehicles in international market. Investors who have knowledge about the emerging stock market can get the benefit from the international market. However he or she has to bear various risk and obstacles for trading. Why investors are trading the stocks internationally? At the time when a dollar currency depreciates, would the US investors choose to invest in other countries or rather increase their investment in US market itself?

1.4 OBJECTIVE OF THE STUDY

Major objective of this study is to know about the performance of the emerging stock market by considering the exchange rate risk specially in case of currency depreciation. The specific objective of the study are stated below:

- To measure the fluctuations in the stock market,
- To observe the performance of the stock market in both local country and foreign stock market,
- To observe the relationship between the exchange rate and stock market returns,
- To observe the events to identify the changes in the market.

1.5 RESEARCH QUESTIONS

Keeping the statement of the problem under consideration, following are the research questions of this study:

- Are there any differences in stock market movements between the countries?
- At what conditions investing in foreign countries is beneficial?
- What kind of relationship exists between the exchange rate and the stock market returns?
- At what circumstances does the currency seems to increase or decrease?
- In which situation market return goes up or down?

1.5 SIGNIFICANCE OF THE STUDY

The study holds high significance to the researcher as it would allow the researcher to explore the world of financial market and stock market. This study focuses on the impact of dollar currency depreciation on the stock market returns in the emerging economies as these markets are known to be

developing rapidly. Reviewing and analysing both the markets will give an in depth insight of theoretical as well as empirical knowledge. Further this research could prove to be essential for investors for making viable investment decisions before investing in the market.

CHAPTER2

2.1 LITERATURE REVIEW

This chapter will critically review the key topics related to the research. Depreciation of currency has been discussed widely in relation to various aspects in the literature. Further, the factors affecting returns have been reviewed and further determined the relationship of exchange rate with stock prices. A special focus has been given to the stock returns during a currency depreciation where the reaction of the market will be discussed.

2.2 EMERGING MARKET ECONOMY

The emerging market economies are highly exposed to risk due to unforeseen events. It is the fastest growing economy today with an increasing number of investors being open to invest in these markets as it brings along high returns with bearing high risk and further providing opportunities to diversify their investments. However, in the wake of a financial crisis, the currencies are found to be depreciating increasingly. However, there is significant difference between devaluation and depreciation of currency, depreciation is experienced in countries with floating exchange rate where the market determines the exchange rate. On the other hand, devaluation is experienced in fixed exchange rate regime where the government determines the value of the currency. However, as suggested by Frankel(1999) "no single regimes is fit for all countries and neither for a given country, no single regime maybe right at all times". Although the emerging markets follow the floating exchange rate regime , it cannot be said that it fits the best despite of its fast growing economy. It is

often found that devaluation and depreciation is used interchangeably but however they always refer to values in terms of others currencies and further the value of currency is determined by the demand and supply of money. Therefore, this research also talks about devaluation and depreciation with keeping the same interest in mind that their values is determined in currency relative to others and further relating it to other topics of the literature.

2.3 THE CONCEPT OF DEVALUATION

According to Todaro(1996 cited in Owen,2005), "devaluation is a reduction in nations official exchange rate relative to all other currencies which further implies a reduction in the domestic value of the currency". However, it is important to note that a depreciation in the currency generally occurs as a result of the market operations where the value of the national currency tends to change in response to the economic situation or perception of events. On other hand, devaluation is an official government tool that government uses as a result of a poor policy decision . Generally, devaluation is said to have the tendency to reflect the environment in which they occur along with being able to set the stage for what is about to take place(Glen,2002). Moreover, devaluation is highly encouraged by the government as it is said to bring stabilising measures to the economy. However, Krugman and Taylor(1977) suggest that there are other various factors that needs to be considered before a government decides to do so. Similarly, in some cases, devaluation could be the only remaining option for an embattled central bank to survive in presence of poor policy decisions. In other words, devaluations tends to occur generally due to high interest rate and poor economic performance. However, devaluation could work as intended if aligned with an improved policy. For instance if the policies are to remain the same in the event of a devaluation, it could result in giving rise to inflation which is indicative of having a slow growth in the economy (Glen,2002). It is highly crucial for policy makers to be aware of the

contractionary effects that devaluation could bring. However, much argument can be found whether devaluation causes expansionary or contractionary effects. Kim and Ying's (2007) findings on the East Asian countries observed of having expansionary effects in many of the countries in the event of a devaluation. However, their results were somewhat sensitive to the definition of exchange rate and the period of estimation. The model developed by Meade(1951) was considered to be the basis of many of the theoretical analysis of devaluation which suggested that devaluation could produce contraction only if the Marshall Lerner condition did not tend to get satisfied. Considerably it is known that devaluation provides opportunities and at the same time gives rise to unknown problem. However, in either case, it is to be noted that devaluation or depreciation is determined to lower the value of their currency.

2.4 TRADE BALANCE AND THE J-CURVE EFFECT

The trade balance is generally found to be sensitive to the changes in the exchange rates. However, when a country's currency depreciates against other currencies particularly, their major trading partners, the depreciated country is said to have rise in the exports and fall in the imports and hence further improving the trade balance. Fang and Miller's (2002) findings suggest that a depreciation of the currency can often produce favourable effect on the stock market's prices and returns as it is followed by increase in exports. Musila and Newark's (2004) findings suggest that a countries specific conditions could also be considered as one factor effecting trade balance. However, Oskoe and Niroomand's (1998) findings reported that it is the sum of import and export elasticity's that depicts whether depreciation would have a favourable effect on the trade balance. Miles(1979) and Mocacelli and Perotti(2006) provide an opposing view that when different approaches are applied to the Keynesian model it produced different results and hence both their studies disapproved that devaluation helps to improve trade balance. Further they suggest that the empirical results do not seem to agree to the Marshal Lerner condition theory that believes devaluation of the

currencies help to improve trade balance, unless in the only condition where the volume effects of demand and supply is greater than one. To further explain in the words of Krugman and Taylor(1977) by increasing the price of foreign goods it creates a high demand for domestic goods and therefore increase exports which on the other hand foreign goods become unwanted which therefore brings decrease in imports. When export starts rising it ultimately gives rise to the domestic goods which is evident that devaluation is working at intended and initially bring improvement in the trade balance as the demand for export goods increases. Similarly, the demand for local products also means increase of domestic output and an increase of output is considered to be a sign of a booming economy from the eye of an investor which then leads to increases of the share prices (Ajayi and Mougoue,1996). Contradicting the statement, devaluation can sometimes lead to giving rise to aggravate inflation with the increasing price for imports discouraging foreign products and creating demand for domestic products. However, in the case of inflation the government may be required to reduce the interest rate in order to control inflation and lower interest rates may cause slow economic growth.

The changes in the exchange rates tend to have different effects in the short run and the long run of the economy. However the trade balance can be studied more precisely with the J-Curve phenomenon. J-curve is generally used to describe the movement of trade balance over the time period. It can be said that it often takes time for trading quantities to adjust to the movements of the exchange rate. For example, Mexico experienced a trade balance deficit of about US \$ 4.5 billion in the year 1994 and in the following year the depreciation of the peso led to improvement in the trade balance generating a surplus of US \$ 7 billion. The effect of the currency depreciation on trade balance tends to be quite complicated and hard to describe. However, it may first deteriorate in the beginning but eventually will see improvement in the latter days. This particular pattern of reaction of the trade balance in response to the depreciation is known as J-Curve effect. In cases where the depreciation of the currency responds to the exchange rates

it is said improve the trade balance immediately. On the contrary, if import and export are inelastic it is said to worsen the trade balance leading to depreciation. However, in the long run, both import and export tend to be responsive to changes in exchange rate and thus reflect a positive influence on the trade balance (Eun, Resnick and Sabherwal,2012).In response to a currency depreciation where the local currency is determined to drop its value which would change the demand and supply of the quantities being imported and exported i.e. it will give rise to export since it becomes cheaper and initially making import more costlier. Moreover, this indicates a growth of the trade balance resulting in what is known to be as a trade J-Curve when the path of the trade balance is plotted over time as changes to exchange rates takes time to reflect on the tradable goods and services which further brings in changes in the import and export(Morrison and Labonte,2011). Bacchetta's(1994) findings suggest that a J-curve effect takes place due to intertemporal speculation as the import prices tend to be relative to future prices immediately after devaluation. For example, the decline of the trade balance in the US during 1972 despite of a devaluation event that occurred in the year 1971 is evident to say that devaluation does not always tend to improve the trade balance even in the long run. This unfavourable impact of devaluation on the trade balance is known to be the J-Curve phenomenon since it enables to see the path that trade balance will follow over time(Oskooee,1985).

2.5 TRADE BALANCE AND STOCK MARKET

The relationship of the stock market with the economy has received much importance by the economists. Similarly, balance of trade has been taken into consideration by many researchers as one of the indicators. However, Bhattacharya and Mukherjee (2002) from their findings observed a negative relation between the trade balance and the stock exchange prices in the context of India. A continuous deficit in the trade balance is indicative of having adverse effect on the stock market. Particularly, the decline in the domestic goods and increase in the foreign goods would lead to investors

wanting to investment in foreign market. Upadyaya and Dhaka(2004) believe that when depreciation increases the price of export it also tends to increase the price of non-traded goods which in turn will affect the trade balance. Thus, observing such relation with the trade balance in the presence of a currency depreciation will provide an opportunity to the investors to understand the country's economy and make decisions.

2.5 FACTORS AFFECTING STOCK RETURNS

There are several factors that creates an adverse effect on the stock returns. An investor intending to diversify his portfolio of stocks is required to make estimation of his expected returns and the variance of returns for every security investment made. However, these parameters would be easier to estimate if there were a common set of factors. Few factors such as the macroeconomic factors, exchange rates and industrial structure are known to have effect on the returns. Moreover, Abugri's (2008) studies suggest that the global factors are significant in explaining returns in all the markets. However, the country variables are found to have an impact at varying significance and magnitudes.

1.1 MACROECONOMIC FACTORS

The stock market is found to be highly influenced by the countries social, political and economical events(Aggarwal, Inclan and Leal,1999).There are various factors that are indicative to suggest that these factors have an impact on the financial market and the stock market. Chen and Ross(1986) state that individual stock depends on anticipated and unanticipated factors. Many of the returns made by investors takes place due to unanticipated factors which is highly influenced by the overall economic conditions.

Further, the macroeconomic variables are indicative of having an influence on the overall economic environment of the country on which firms issuing securities conducts its business. Solnik (1984) investigated the influence of the macroeconomic variables on the stock returns considering the variables like exchange rate changes, interest rate differentials, the level of domestic interest rate and the changes in the domestic inflation expectations and hence his findings conclude that the international monetary variables seemed to have a weak effect on the returns as compared to the domestic variables being considered. Similarly, Asperm (1989) examines the changes in the interest rates, employment, industrial production, imports and the inflation measure and hence reported that there was significantly very less variability of the returns in the European countries it observed and hence further raises the point that the much of the variation was rather explained by an international market index.

1.2 EXCHANGE RATE

The changes in the exchange rate shows the relation between the currency of the country who issues stocks and the currency of the other country where the other firms and investors reside. Adler and Simon (1986) findings on the effect of exchange rate changes to the foreign stocks and bond returns observed a huge variability of foreign bond indexes to that of foreign stock indexes and further suggested that it would be beneficial to protect the foreign stock investment against exchange rate uncertainty. Similarly, the study conducted by Eun and Resnick (1988) reported that the cross correlations among the major stock markets and exchange rate markets were observed to be relatively low but positive. The result observed by them suggests that the changes in the exchange rate in a particular country was seen to reinforce the stock market movements of that country and the countries that were observed. Following study conducted by Gupta and Finnerty (1992) using principal component analysis on 15 years of monthly data on 30 stocks from the five chosen countries suggested that the risk generated by the exchange rate is generally not priced.

1.3 INDUSTRIAL STRUCTURE

The findings of Roll (1992) on the correlation structure of national equity markets suggested that the industrial structure of a country was significant to explain the correlation structure of global equity index returns. He further concluded that the industry factors did intend to explain a major portion of the stock markets than that of changes in exchange rates. However, on the contrary, Eun and Resnick using a sample of 160 stocks from eight countries and 12 industries resulted in suggesting that the pairwise correlation of global equity returns were better estimated through models that identified country factors rather than industry factors. Similarly, Heston and Rouwenhorst (1994) report of observing low correlation between country indexes possibly due to country specific sources of variation.

2.6 THE RELATIONSHIP BETWEEN THE EXCHANGE RATE AND STOCK PRICE

The dynamic relation between the stock price and the exchange rate has grabbed much attention to the economists both in terms of theoretical and empirical reasons it holds (Nieh and Lee, 2001). Much of the research on exchange rate and stock market are found to be observed taking data's from the crisis period as the crisis is considered as the time when the policymakers are likely to intervene to bring changes to the exchange rates (Hatemi-J and Roca, 2005). Stiglitz (1993) argues that the government's intervention to the financial markets is highly essential especially when markets fail pervasively due to inefficiency to function properly, therefore intervening the market would allow them to make more rules and regulations so that the behaviour of the stock market could be brought under control to further reduce volatility and anomalies and providing less opportunity for speculation and arbitrage. On this case, China's policy to intervene the market to limit the appreciation of its currency against the U.S dollar and other countries led them to take an unfair advantage with its

trading partners (Morrison and Labonte, 2011). There are significant number of researches conducted empirically on the relation between the exchange rate and the stock market using GARCH model, Error Correction model by Engle and Granger(1987) and Yamamoto procedure(1995). Pank , Fok and Liu's (2007) findings on the possible linkages between the exchange rate and the stock prices suggested that it is highly dependent on the economies of each country with respect to their exchange rate regimes their following, the trade size, the degree of capital control and the size of equity market. The findings of Geske and Roll(1983) and Malliaropulos(1998) on the effect of exchange rates on stock markets suggests that the stock prices are likely to increase at an event of a depreciated domestic currency. Granger, Huang and Yang's (2000) findings on the relationship between the stock price and exchange rate during the Asian Financial crisis observed that a bidirectional and unidirectional relation existed between the two variables. To support, Kumar's(2009) empirical evidence on casualty relation of the two variables using bivariate Mackey Glass Model suggest that there is no long relation between the two variables but there is evidence of a bidirectional linear and non-linear granger casualty between the two. Similar to Kumar's findings, the studies of Alagidede, Panagiotidis and Zhang's(2011) findings on the casual linkage between the stock markets and foreign markets from the period 1992 to 2005 in Australia, Japan, Switzerland and UK using cointegration tests observed no long run relation relationship between the two variables. The traditional approach and the portfolio approach can be further used to explain the relationship between the stock price and the exchange rate.

Traditional Approach

This approach suggests that the exchange rates tends to influence the share value of domestic and multinational firms. For instance, when there is an appreciation of the local currency under the floating exchange rate regime it is likely to have negative effect on the exports further affecting the stock prices and companies loosing benefits. The findings of Granger,Huang and

Yang(2000) on relations between stock market and exchange rates using root unit and cointegration models observed that South Korea resulted in showing agreement to the traditional approach that showed that exchange rates were determinant to lead the stock prices.

Portfolio Approach

This approach tends to reflect a negative relationship between the exchange rates and the stock prices and this approach believes that the casualty runs from stock prices to exchange rates. Similarly, Granger, Huang and Yang's (2000) findings contrary to South Korea resulted in showing that Philippines data were evident to say that the stock prices lead to changes in exchange rates with a negative correlation. However, Alagidede , Panagiotidis and Zhang 's (2011) use the Hiemstra Jones test to identify possible non-linear casualty among the two variables in Australia, Canada, Japan, Switzerland and UK which resulted in reflecting a causality from stock to exchange rates in Japan and weak causality of the reverse direction in Switzerland significantly.

Thus, these approaches are indicative to suggest either the stock prices influences the exchange rate or vice-versa. However, due to the instant and continuous reactions that capital markets produce to the changes in the national currencies, it has led to these variables receiving very little importance in identifying a significant correlation between stock prices and currency fluctuations (Barton and Bodnar,1994).

2.7 DEPRECIATION AND STOCK MARKET RETURNS

Research suggests that the impact of devaluation on the stock market is highly dependent on the nature of firms it is operating i.e. the exporting firms will see an increase in the stock prices whereas the importing firms will see a decrease in their stock prices. Contrary to the above statement, the decline in the stock market during a devaluation period is not just dependent on the type of firms it operates but also on some other factors i.e. it also depends on whether the reserves were lower, depreciation in the real exchange rates over the past years, declination in the capital account, increase of current account deficit or if the country's credit rating went down as suggested by Patro , Wald and Yu's findings. However, in the case where firms do both could have their stock prices led to any direction (Granger, Huang and Yang, 2000). Cooper (1971b) and Hirschman (1949) show support to this statement as they suggest that the firms that do import and export are likely to face more difficulties as devaluation from one hand tends to give rise to exports whereas on the other hand it tends to decrease the imports. Fang's(2001) shares an opposing view from his findings on currency depreciation and stock market return on some Asian countries using bivariate and GARCH(1,1) models and observed sharing a negative relation between the two. Moreover, Torbjorn et al.(2000) investigates to find out whether the stock market anticipated the devaluation in Mexico in the 1990's. Thier findings observe that the during the week of the devaluation, companies with high net exports resulted in having significant positive abnormal returns whereas companies with low net exports reflected a significant negative abnormal return. Moreover, their high and low performance of the exports indicate that devaluation expectations was likely to be developed a year before the actual event. Penttinen(2000) argues that the possibility of negative returns of individual stock prices could be a result of expected devaluation. Grier and Grier(2001) uses a sample of 25 developing countries to study the severity of the financial crisis of 1997 observe that amongst the 25 countries,12 countries that followed the floating regime resulted in showing that currency depreciation had a significant positive impact on stock returns. On the other hand, the other 13 countries that followed pegged exchange rates resulted in showing

significant negative stock returns. Further, Fama and French's (1990) evidence suggest that the business cycle shares a correlation with the returns of the stocks and bonds. According to Hunter and Terry(2002), for a stock market to be fully successful it says that the stock prices and returns should not fluctuate more often from real prices and returns and also observe that a stock market should have a rapid growth at a steady pace. However, the real prices and returns are concerns of the stabilization policies. Becker, Celos and Richard's (2000) findings is evident to suggest that currency depreciation can be assessed better through stock returns rather than other assets as it is readily available at a high frequency without lags and generally not accustomed to interventions by the monetary and the exchange rate authority. However, Aggarwal, Inclan and Leal(1999) from their findings observe that changes in variance was highly dependent on the country it belonged and the frequency of the data i.e. more points were observed with using daily returns than with weekly or monthly returns. The findings of Bailey and Chung (1995) on detecting sudden shifts of volatility using the ICSS algorithm observe that the period of increased volatility tend to be common to returns measured in local currency and dollar adjusted returns. Cumperayot , Keijzer and Kouwenberg's (2006) findings with a sample of 2500 daily returns and using probit model resulted showing a sharp decline in the stock market of emerging countries that went through crisis period which further witnessed the possibility for the currency to devaluate extremely on the same day. Further, Lakonishok and Shapiro's(1986) studies on historical relationship between the stock returns and the variables such as beta, residual standard deviation and size from the time period of 1962-1981 resulted in having neither beta nor residual, standard deviation were capable of explaining the cross sectional variation in returns however only size seemed to significantly matter. Cumpaarayot et al,(2003) stresses the point that extreme events on stock markets are much more interrelated globally specifically when they originate from the US.

However, in the event of a currency depreciation that is determinant to bring changes in the exchange rates tends to pose foreign investors with bigger risk at times than that of local investors as the stocks are priced in local currencies and significantly these changes in exchange rate tends to pass through stock returns (Glen,2002). As much as foreign investors, the multinational firms are also prone to high risk of fluctuating currencies which tends to create a negative impact on their performance(Sequeira et al.,2004). Likewise Glen's findings observed that there were significant negative returns in the months before the devaluation but not after the devaluation. There was high number of depreciation events observed in the Japanese Yen almost by 17% but at the same time the NIKKEI 225 Index reported an increase by 42%.This showed that the depreciation of the currency has a positive impact on the stock market.

2.8 THE PERFORMANCE OF STOCK MARKET RETURNS FOLLOWING DEPRECIATION

The investor reactions towards such events is what determines the performance of the stock market whether investors take these situations as a buying opportunity or rather selling of stocks. It is often known that the fear of the stocks being oversold leads to investors wanting to sell their stocks at any price which in turn creates a decline in the local stock market. But gradually the rise in the exports does tend to allow the stocks to move back up in price. On the contrary, foreign investors tend to lose faith following such events as it poses high risk to these investors. Investors today are prone to facing a high integrated financial market where the domestic and foreign stocks are very two close substitutes. They hold domestic or international securities with an expectation of high returns but also inviting high risk along with it. Therefore, an investor may benefit from investing in emerging markets after careful consideration as it may provide significant diversification benefits depending on the investment horizon (Graham, Kiviahho and Nikkinen,2012). Kamin and Wood(1997) pointed out that an

increase in the capital mobility also led to an increased risk of financial instability. It can be further said that the business conditions and market performance affect one another (Fama and French's (1990). For instance, the rate of depreciation of the domestic currency affects the rate of return of foreign investors who hold foreign stocks and similarly it has a similar effect on the domestic investors who hold foreign investments. The fall of the Asian financial crisis is evident to show that the depreciation of the local currencies against the dollar led to increasing the returns of the US stocks. This created a shift between the local and the foreign market where the investors considered leaving their domestic assets and making investment on the US assets with an interest of receiving higher returns (Boyer, Kumagai and Yuan,2006). Moreover, financial markets are known to react to the changes in the currency instantly and hence tend to reach their equilibrium in the short run which is why it tends to pose a negative relation to the stock returns.

CHAPTER 3

3.1METHODOLOGY

This chapter will focus on describing the research methods being used to carry out this research that would meet its objectives. More specifically the type of variables that is being used for data collection, the type of research approach, sampling size, data collection method, data analysis method and the limitations will be found to be discussed in this chapter.

3.2 THE MEANING OF RESEARCH

Research in simple words can be termed as search of knowledge. In the words of Redman and Mory (2004), research is defined as " a systemised effort to gain new knowledge". Similarly, John cited in Kumar, date defines research as "the systematic and objective analysis and recording of controlled observations that may leave to development of generalizations,

principles or theories result in prediction and possibly ultimate control of events. Further, research can be considered as a movement, a movement from a known to unknown. This eagerness is what leads to obtaining knowledge of whatever the unknown can be termed as research(Kumar, 2008).

3.3 TYPE OF RESEARCH

A research can be classified into exploratory research, conclusive research, modeling research and algorithm research.

1.EXPLORATORY RESEARCH

This is the type of research that allows the researcher to analyse the data and explore the possibility of observing as many relationships as possible between different variables and hence not knowing the end results. It is said to lay a foundation for the formulation of hypothesis(Panneerselvam,2006).

2.CONCLUSIVE RESEARCH

This type of research is said to test the hypothesis of a research problem that has been created by the exploratory research as it tends to draw definite conclusions for implementations. Once the hypothesis has been proven, a decision framework can be developed. However, this type of research can further be classified into two categories i.e. the descriptive research and the experimental research(Panneerselvam,2006).

I . DESCRIPTIVE RESEARCH

This type of research is carried out with specific objective which results in providing definite conclusions.

II. EXPERIMENTAL RESEARCH

This type of research is said to be used in order to study the effect of a set of factors on the response variable of a system of study.

4.MODELING RESEARCH

According to Panneerselvam (2006), a model is said to be an abstract of reality. There are generally three type of models such as symbolic, mathematical and simulation model.

I. SYMBOLIC MODEL

This type of model is known to be used to represent the performance measure of interest in terms of its variables. More specifically it signifies that the features of system are related by an equation.

II. MATHEMATICAL MODEL

This type of research is found to be used with an aim to solve real life complex problems that generally arises in the management system, government etc. These models are also known as operational models.

III. SIMULATION MODEL

These type of model is used in a real life experiment conducted to gain data for decision making process. This model can be further divided into discrete and continuous simulations. It is said that "in continuous simulation the clock unit of simulation is continuously incremented, whereas in discrete simulations it is incremented in discrete manner "(Panneerselvam,2006).

5.ALGORITHM RESEARCH

An algorithm of research is said to have a well systematic arrangements of steps in order to solve problems of interest in various fields.

3.4 SELECTION OF RESEARCH APPROACH

The selection of research approach is of high importance to the researcher. A number research approaches can be found as discussed above and hence choosing the wrong approach could lead to having differences in results. However, the researcher chooses the exploratory research(Melville,2007).

3.5 Type of Data

1. QUALITATIVE DATA

A qualitative data tends to represent data's that cannot be broken down into numbers. These type of data's signifies social reality rather than precision. However, this type of data can sometimes provide support in testing hypothesis(Carter,1997).

1.2 QUANTITATIVE DATA

These type of data tend to represent data's that can be measured in numeric terms or measurements. It tends to provide explanation through collection of numeric data's although there are other factors like research design and methods that are equally important. As compared to qualitative data, this research method considers huge calculations which often makes it harder for the researcher at times. However, through software tools that is available in order to calculate the data's makes it easier for the researcher to analyse (Mujis, 2011). This research is based on quantitative data since the data's are collected and represented in numbers.

3.6 DATA COLLECTION METHOD

The data's are known to be the basic input for decision making process in a business. There are generally two different types of data collection method popularly known as primary data and the secondary data.

I. PRIMARY DATA

This type of data are collected through various ways like the observation method, interview, survey etc. Hence, these data's are collected on the basis of the researchers objective and which cannot be found elsewhere.

II. SECONDARY DATA

This type of data's are collected from sources that are already available which have been created with an intention for future uses. However, there is no control over the secondary data and hence the results might not tend to appropriate for many applications. The secondary data are known to be found through internal and external sources.

1. INTERNAL SOURCES

These sources are often not readily available in the market due disclosed information's or may require approval to use such data's for specific purposes. These data's often tend to be helpful for companies to formulate plans and policies etc. These type of data's are often used by companies for various reasons.

2.EXTERNAL SOURCES

These data's are readily available through various sources such as books, journals, articles, newspapers, internet, annual reports, financial database like bloomberg, yahoo finance and quandl etc. The researcher finds these sources highly reliable and hence in the case where companies provide wrong information could result in giving misleading image of the company. The researcher uses secondary sources for its research purpose popularly the yahoo finance and the quandl which provided the historical prices of the related variables.

SELECTION OF DATA : SECONDARY DATA

This research is entirely based upon secondary data. Secondary data is significant for this research as it provides sample sizes in order to get the empirical evidence to the research topic.

3.7 SAMPLING

The researcher uses sample data's of six emerging market countries from the life period of 2000 to 2013. The researcher uses the exchange rate data and stock market index returns in order to analyse the relationship between the other two variables. The exchange rate has been taken in terms of 1 U.S Dollar equivalent to the local currency. The following table reflects the number of countries along with their respective index that has been chosen to perform the analysis. Monthly data's have been taken into consideration and data's have been compounded to get the returns. However, it is to be noted that the US market index has been chosen to show the relationship with other markets in the presence of dollar depreciation.

COUNTRY	CURRENCY	INDICES
CHINA	YUAN(CNY)	SHANGHAI INDEX
BRAZIL	REAL	IBOVESPA INDEX
MEXICO	PESO(MXN)	IPC INDEX
INDIA	RUPEE(INR)	S&P BSE SENSEX
RUSSIA	ROUBLE(RUB)	RTSE INDEX
GREECE	EURO(EUR)	ATHENS COMPOSITE INDEX
US	DOLLAR (\$)	DOW JONES COMPOSITE INDEX

Fig.1.1

3.8 SOURCES OF DATA

The data's have been collected through reliable sources as unreliable data's could produce misleading results. The nominal exchange rates have been taken collectively from Quandl database : an economic database (<http://www.quandl.com/>). Similarly, the country indices have been taken from yahoo finance particularly. The reliability of the data can be confirmed as much these sources have been found to be used in other published journal articles.

3.9 DATA ANALYSIS METHOD

Once the data has been collected, it requires to use proper tools and techniques for further classification and analysis. The tools of classification of data are frequency distribution, relative distribution and charts. Further charts are known to be represented through graphics. Moreover, The classification tools tend to describe the data presentation techniques for clear interpretations(Panneerselvam,2006)

1.STANDARD DEVIATION

standard deviation is that statistical tool which is used to show the average dispersion around the mean. It shows the average standard volatility in periodic data for over the period.

$$\text{Standard deviation } (\sigma_j) = \sqrt{\sum_{t=1}^n [R_j - E(R_j)]^2 \times P_j}$$

If probability is not given, that means, the S.D. can be found using historical return as follows:

$$\text{Standard deviation } (\sigma_j) = \sqrt{\frac{\sum_{t=1}^n [R_j - E(R_j)]^2}{n}}$$

Where,
n = number of observation

2. COEFFICIENT VARIATION

It is the ratio between the standard deviation and the mean and is generally represented in percentage. This measure tends to indicate the consistency of the observations within a sample and discriminated a given set of samples sharply in terms of consistency.

$$\text{Coefficient of Variation } (CV_j) = \frac{\text{Standard Deviation}}{\text{Average Return}} = \frac{\sigma_j}{ER_j}$$

In the above case, both samples have the same standard deviation, but have a s

$$COV_{AB} = \frac{\sum (R_A - \bar{R}_A)(R_B - \bar{R}_B)}{n} \dots \dots \dots \text{the probability is not given}$$

$$COV_{AB} = \sum (R_A - \bar{R}_A)(R_B - \bar{R}_B) \times P_j \dots \dots \dots (\text{If probability is given})$$

3. REGRESSION ANALYSIS

Regression model is generally known to be used to describe and evaluate the relationship between a given variable with other more variables. In other words, "regression is an attempt to explain movements in a variable by reference to movements in one or other variables"(Brooks,2008).

value of dependent variable = constant + slope * value of independent variable

or , Y = a + bx

4. CORRELATION ANALYSIS

It is often said that the correlation between two variables measures the degree of linear association between them. For instance, if it is known that y and x are correlated than it means y and x are being treated in a completely symmetrical way.

5. VARIABLES

Choosing the right variables is highly important as a wrong variable could generate an adverse impact on the outcome of the research. Before deciding to choose variables for data collection, it has to be critically analysed through secondary data's that provide literary views of various authors in the similar subject matter. Further, the outcomes generated by various researchers requires to be critically analysed to make the right selection of variables. Although the literary research done by the researcher were suggestive of various variables, however only two variables were chosen to show a correlation among the two. However, independent variables for US stock market returns was chosen to be exchange rates and local stock market returns.

Rate of Return

We calculate the rate of return for the exchange rate and the stock market including the US stock. The above is the formula to calculate the return.

Where,

$$\text{Average rate of return, } \bar{R}_j = \frac{\sum_{t=1}^n (R_j)}{n}$$

US STOCK MARKET RETURN

The US stock market return is chosen to be the independent variable as the research is being considered taking dollar depreciation. This variable analyses its relationship with other local emerging markets and exchange rate to observe the returns and their behaviour.

INDEPENDENT VARIABLE

The exchange rate and the local stock market is selected to be an independent variable. This variable would allow to reflect the changes in the currency and its impact on the returns of the market.

However, each country will be individually analysed separately with the US market.

CHAPTER 4

4.1 DATA ANALYSIS

This chapter describes the methodology and approaches that will be used to analyse this research. Further, the results will be interpreted and further some discussions will be made highlighting the major changes.

4.2 FINDINGS AND DISCUSSIONS

Mainly this study aims to search the impact of the currency in stock market return. This topic is divided into two sections. The first section is about the statistical tools like mean, standard deviation, range analysis and other necessary tools to evaluate the performance of the stock market. And the second part is about the regression line to measure the relationship and its impact of currency depreciation on stock market returns. The relationship of US stock returns is determined with stock returns and exchange rate returns. The US market is analysed using both the variables i.e. domestic stock markets and exchange rate return.

1.1 US stock market and Brazil stock market

Country and no. of events	Variables	Mean or Average	Std. error	S.D.	C.V.	Range	Maximum	Minimum
Brazil (85)	USR	-0.0276	0.0431	0.39702	-14.3848	4.3589	0.80045	-3.5585
	BSR	0.059153	0.0019	0.01784	0.30159	0.2153	0.0605	-0.1548
	EXR	-0.0289	0.00244	0.2246	0.7781	0.1180	0.00083	-0.1188

Source: Refer appendix 1.1

During the 14 years period, the dollar depreciated about 85 times and appreciated 83 times in Brazil. The average of the 85 depreciated events is -2.89%. Average dispersion around the mean of the depreciated currency is 2.25 %. The relative percentage of volatility on the depreciated currency is 77.81%. The magnitude of the events, which is measured relative to the dollar, has the variation, ranging from the low of -11.88% to a high of -0.083% .The range of the fluctuation is 11.80.The fluctuation is the difference between maximum of -11.88% and minimum of -0.083%. The standard error on the forecasting mean is about 0.244%.

Average monthly return of the US stock market is about -2.76% with the standard deviation of 39.70% and with coefficient variation of 1438.48%. U.S. stock return(DJI) has the variation, ranging from the low of -20.25% to a high of 31.43%. Therefore, the range of fluctuation is 51.68%. The standard error on the forecasting mean return of US is about 1.5%.

At the same time stock market of Brazil is going with 5.92% monthly average return and 1.78% standard deviation with coefficient variation of 30.16%. Brazil stock return has the variation, ranging from the low of -15.48% to a high of 6.05%. Therefore, range of the fluctuation is 21.53%. The standard error on the forecasting mean return of US is about 0.19%.

This study shows that during these events , the performance of the US stock market is extremely poor than stock market of Brazil. In other words, during these events, investing in US stock market is quite riskier than stock market of Brazil. Hence, if currency is expected to depreciate, investors are looking to invest in the stock market of Brazil than in stock market of US.

1.2 Regression Analysis of US stock returns and Brazil Stock Returns in case of dollar depreciation

Country	Alpha(α)	Beta(β)	Error Term(e)	R ²	R	P value
BSR	0.101(0)	21.819(0.534)	0.481	0.961	0.98	0
EXR	-0.024(0.294)	0.117(0.952).	1.94	0	0.007	0.952

Table 1.2

In this study, stock market returns are analyzed as per the change in the currency return and stock market return of another country. So, the following equation is used to explain the linear relationship between the variables.

$$\begin{aligned}\text{USR} &= a + b \times \text{BSR} + e, \\ &= 0.101 - 21.819 \times \text{BSR} + 0.481\end{aligned}$$

By taking the USR as the dependent variable as per the change in the BSR, the linear regression line shows the intercept value of 0.101, beta coefficient as the slope of the line is 21.819. Due to the lower value of e and higher value R^2 , statistically the relationship seems as significant.

Similarly,

By taking the USR as a dependent variable and the EXR as the independent variable, the following regression is expressed;

$$\begin{aligned}\text{USR} &= a + b \times \text{EXR} + e, \\ &= -0.024(0.73) - 0.117 \times \text{BSR} + 1.94\end{aligned}$$

By taking the USR as the dependent variable as per the change in the EXR, the linear regression line shows the intercept value of -0.024, beta coefficient as the slope of the line is -0.73. Due to the higher value of $e(1.94)$ and lower value $R^2(0)$, statistically the relationship does not seem as significant. That means, the returns of US stock market is explained by the other economic factors and stock market of Brazil rather than EXR. The findings of Chen & Ross (1986) shares similar results that the returns were better explained by other macroeconomic factors.

2. US stock market and China stock market

Country and no. events	Variables	Mean or Average	Std. error	S.D.	C.V.	Range	Maximum	Minimum
China (91)								
	USR	0.00048	0.0067	0.0643	13395	0.3525	0.1234	-0.2290
	CSR	0.01281	0.0091	0.869	67.21	0.4926	0.2245	-0.2181
	EXR	-0.00365	0.00045	0.0043	1.178	-0.0218	-0.0016	-0.0202

Table 1.3(Refer appendix 1.1)

During the 14 years period, the dollar depreciated about 91 times and appreciated about 77 times in China .The average of the depreciated currency is -0.365%. Average dispersion around the mean of the currency depreciation is 0.43 %. The relative percentage volatility is -0.0218%. The magnitude of the events, which is measured relative to the dollar, has the variation, ranging from the low of -0.0202% to a high of -0.0016% .The range of the fluctuation is -0.0218. It is the difference of maximum of -0.16% and minimum of -0.0202%. The standard error on the forecasting mean is about 0.0.00045%.

Average monthly return of the US stock market is 0.48% with the standard deviation of 6.43% and coefficient variation of 13395%. U.S. stock return has the variation, ranging from the low of -22.9% to a high of 12.34%. Therefore, the of range of fluctuation is 35. 25. The standard error on the forecasting mean return of US is about 0.67%.

At the same time stock market of China is going with 5.92% monthly average return and 1.78% standard deviation with coefficient variation of 1.28%. China stock return has the variation, ranging from the low of 21.81% to a high of 22.45%. Therefore, the range of fluctuation is 49.26%. The standard error on the forecasting mean return of US stock market is about 0.19091%.

This study shows that during these events, the performance of the US stock market is extremely poor than stock market of China. In other words, investing in US stock market is quite riskier than stock market of China. Hence, if currency is expected to be depreciate, investors are looking to invest in stock market of China than in stock market of US.

2.1. Regression analysis of US stock market returns (USR), china stock market returns (CSR) in case of dollar depreciation

Country	Alpha(α)	Beta(β)	Error Term(e)	R ²	R	P value
CSR	-0.002(0.81)	0.167(0.032)	0.076	0.051	0.032	0.077
EXR	-0.007(0.452)	-1.967(0.219))	1.589	0.017	0.13	0.219

Table 1.4

In this study, stock market returns are analyzed as per the change in the currency returns and stock market return of another country. So, the following equation is used to explain the linear relationship between the variables.

$$\begin{aligned}\text{USR} &= a + b \times \text{CSR} + e, \\ &= -0.002 - 21.819 \times \text{CSR} + 1.589\end{aligned}$$

By taking the USR as the dependent variable as per the change in the BSR, the linear regression line shows the intercept value of 0.002, beta coefficient as the slope of the line is 0.167. Due to the lower value of e and higher value (0.051) R^2 , statistically the relationship seems as significant.

Similarly,

By taking the USR as a dependent variable and the EXR as the independent variable, the following regression is expressed;

$$\begin{aligned}\text{USR} &= a + b \times \text{EXR} + e, \\ &= -0.007 - 1.967 \times \text{BSR} + 1.589\end{aligned}$$

By taking the USR as the dependent variable as per the change in the EXR, the linear regression line shows the intercept value of -0.007, beta coefficient as the slope of the line is -0.1967 Due to the higher value of $e(1.94)$ and lower value $R^2(0.017)$, statistically the relationship seems as insignificant. That means, the returns of US stock markets can be better explained by the stock market of China and other economic factors.

3.1. US stock market and Greece stock market

Country and no. events	Variables	Mean or Average	Std. error	S.D.	C.V.	Range	Maximum	Minimum
Greece (98)	USR	0.01105	0.007	0.0707	6.39819	0.44209	0.19195	-0.229
	GSR	0.00828	0.0085	0.08456	10.21256	0.4586	0.21929	-0.239

	EXR	-0.0198	0.0020 4	0.0201 5	-1.01768	-13175	-0.04685	-0.0849
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Table 1.5(Refer appendix 1.1)

During the 14 years period, the dollar depreciated 98 times and appreciated about 70 times in Greece. Average of the 98 depreciated events is -1.98%. Average dispersion around the mean of the depreciated currency is 2.02 %. The relative percentage of volatility on the depreciated currency is 101.77%. The magnitude of the events, which is measured relative to the dollar, has the variation, ranging from the low of -8.49% to a high of 4.69% .The range of fluctuation is 13.75%. It is the difference of maximum of 4.69% and minimum of -8.49%. The standard error on the forecasting mean is about 0.204%.

Average monthly return of the US stock market is about 1.105% with the standard deviation of 7.07% and with coefficient variation of 639.819%. U.S. stock return has the variation, ranging from the low of -22.9% to a high of 19.20%. Therefore, the range of the fluctuation is 42.09%. The standard error on the forecasting mean return of US is about 0.7%.

At the same time stock market of Greece is going with 0.828% monthly average return and 8.45% standard deviation with coefficient variation of 1021.56%. Greece stock return has the variation, ranging from the low of -23.9% to a high of 21.93%. Therefore, the range of the fluctuation is 45.86%. The standard error on the forecasting mean return of US is about 0.85%.

This study shows that during these events, the performance of the US stock market is better than stock market of Greece. In other words, during these events investing in US stock market is less risky than stock market of Greece. Hence, if currency is expected to be depreciate, investors are not looking to invest in stock market of Greece and rather invest in stock market of US.

3.2 Regression analysis of US stock market returns (USR), Greece stock market returns (GSR) in case of dollar depreciation

Country	Alpha(α)	Beta(β)	Error Term(e)	R ²	R	P value
GSR	0.008(0.223)	0.386(0)	0.076	0.213	0.461	0
EXR	0.006(0.556)	-0.257(0.474)	0.357	0.002	0.042	0.63

Table 1.6

In this study, stock market returns are analyzed as per the change in the currency returns and the stock market return of another country. So, the following equation is used to explain the linear relationship between the variables.

$$\begin{aligned}\text{USR} &= a + b \times \text{GSR} + e, \\ &= 0.008 - 0.386 \times \text{GSR} + 0.078\end{aligned}$$

By taking the USR as the dependent variable as per the change in the GSR, the linear regression line shows the intercept value of 0.008, beta coefficient as the slope of the line is -0.386. Due to the lower value of e and higher value R^2 , statistically the relationship seems as significant.

Similarly,

By taking the USR as a dependent variable and the EXR as the independent variable, the following regression is expressed;

$$\begin{aligned}\text{USR} &= a + b \times \text{EXR} + e, \\ &= -0.006 - 0.257 \times \text{EXR} + 0.357\end{aligned}$$

By taking the USR as the dependent variable as per the change in the EXR, the linear regression line shows the intercept value of -0.006, beta coefficient as the slope of the line is -0.257 Due to the higher value of e and lower value $R^2(0.002)$, statistically the relationship does not seem as significant. That means the returns of US stock market is better explained by Greece market and other economic factors rather than EXR.

4.1 US stock market and India stock market in case of dollar depreciation

Country and no. of events	Variables	Mean or Average	Std. Error	S.D.	C.V.	Range	Maximum	Minimum
India(88)	USR	0.0158	0.0062	0.0583	3.84321	0.2793	0.1345	-0.1448
	ISR	0.03204	0.0017	0.0696	2.17228	0.0817	0.0005	-0.0812
	EXR	-0.0127	0.00734	0.01562	-1.2299	-0.4339	-0.2826	-0.1513

Table 1.7 (Refer appendix 1.1)

During the 14 years period, the dollar depreciated about 88 times and appreciated about 80 times. The average of the depreciated events is -1.27%. Average dispersion around the mean of the currency devaluation is 1.56 %. The relative percentage volatility on the depreciated currency is 122.99%. The magnitude of the events, which is measured relative to the dollar, has the variation, ranging from the low of -15.13% to a high of -28.26% .The range of the fluctuation is 43.39%. It is the difference of maximum of 28.26% and minimum of 15.13%. The standard error on the forecasting mean is about 0.734%.

Average monthly return of the US stock market is about 1.58% with the standard deviation of 5.83% and with coefficient variation of 384.32%. U.S. stock return has the variation, ranging from the low of -14.48% to a high of 13.45%. Therefore, the range of the fluctuation is 27.93%. The standard error on the forecasting mean return of US is about 0.62%.

At the same time stock market of India is going with 3.204% monthly average return and 6.96% standard deviation with coefficient variation of 217.228%. Indian stock return has the variation, ranging from the low of -8.12% to a high of 0.5%. Therefore, the range of the fluctuation is 8.17%. The standard error on the forecasting mean return of US is about 0.17%.

This study shows that during these events, the performance of the US stock market was poor than the stock market of India. In other words, during the event periods investing in US stock market is risky than stock market of

India. Hence, if the currency is expected to depreciate, they are looking to invest in stock market of India than in stock market of US.

4.2 Regression analysis of US stock market returns (USR), India stock market returns (ISR) in case of dollar depreciation.

Country	Alpha(α)	Beta(β)	Error Term(e)	R ²	R	P value
ISR	0(0.915)	0.492(0)	0.073	0.338	0.588	0
EXR	0.003(0.712)	-0.966(0.015)	0.389	0.067	0.259	0.015

Table 1.8

In this study, stock market returns are analyzed as per the change in the currency returns and the stock market return of another country. So, the following equation is used to explain the linear relationship between the variables.

$$\begin{aligned}\text{USR} &= a + b \times \text{ISR} + e, \\ &= 0 + 0.492 \times \text{ISR} + 0.073\end{aligned}$$

By taking the USR as the dependent variable as per the change in the ISR during the events, the linear regression line shows the intercept value of 0, beta coefficient as the slope of the line is 0.492. Due to the lower value of e and higher value R^2 , statistically the relationship seems as significant.

Similarly,

By taking the USR as a dependent variable and the EXR as the independent variable, the following regression is expressed;

$$\begin{aligned}\text{USR} &= a + b \times \text{EXR} + e, \\ &= 0.003 - 0.966 \times \text{EXR} + 0.389\end{aligned}$$

By taking the USR as the dependent variable as per the change in the EXR, the linear regression line shows the intercept value of 0.003, beta coefficient as the slope of the line is -0.996. Due to the higher value of e and lower

value $R^2(0)$, statistically the relationship does not seem as significant. That means the returns of US stock market is better explained by Indian market and other economic factors rather than EXR. This means that the investors would observe the Indian market and other economic factors. This results shares similar view with Chen & Ross (1986) that there are other macroeconomic factors that could better explain the returns of the market.

5.1 US stock market and Mexico stock market

Country and no. of events	Variables	Mean or Average	Std. error	S.D.	C.V.	Range	Maximum	Minimum
Mexico (88)	USR	0.019558	0.0071	0.0665	3.40014	0.421	0.192	-0.229
	MSR	0.025331	0.00525	0.04927	1.9450	0.2478	0.1318	-0.116
	EXR	-0.15524	0.0017	-0.0162	0.1049	-0.1176	-0.0447	-0.0747

Table 1.9 (Refer appendix 1.1)

During the 14 years period, the dollar depreciated about 88 times and appreciated about 80 times in Mexico. The average of the total depreciation events is -15.52%. Average dispersion around the mean of the currency devaluation is 1.62 %. The relative percentage volatility on the devaluation is 10.49%. The magnitude of the events, which is measured relative to the dollar, has the variation, ranging from the low of -7.47% to a high of -04.47%. The range of the fluctuation is 11.76%. The standard error on the forecasting mean is about 0.17%.

Average monthly return of the US stock market is about 1.95% with the standard deviation of 6.65% and with coefficient variation of 340%. U.S. stock return has the variation, ranging from the low of -22.9% to a high of 19.2%. Therefore, the value of range of fluctuation is 42.1%. The standard error on the forecasting mean return of US is about 0.71%.

At the same time stock market of Mexico is going with 2.53% monthly average returns and 4.927% standard deviation with coefficient of variation

of -194.5%. Mexican stock return has the variation, ranging from the low of -11.6% to a high of 13.18%. The standard error on the forecasting mean return of Mexico stock market is about 0.525%.

This study shows that during these events, the performance of the US stock market was poor than stock market of Mexico. In other words, during these periods, investing in US stock market is riskier than investing in stock market of Mexico. Hence, if the currency is expected to depreciate, the investors are looking to invest in stock market of Mexico than in stock market of US.

5.2 Regression analysis of US stock market returns (USR), Mexico stock market returns (MSR) in case of dollar depreciation.

Country	Alpha(α)	Beta(β)	Error Term(e)	R ²	R	P value
MSR	-0.002(0.704)	0.865(0)	0.112	0.41	0.64	0
EXR	0.002(0.82)	-0.118(0.01)	0.424	0.075	0.274	0.01

Table 1.10

In this study, stock market returns are analyzed as per the change in the currency returns and the stock market return of another country. So, the following equation is used to explain the linear relationship between the variables.

$$\begin{aligned}\text{USR} &= a + b \times \text{MSR} + e, \\ &= -0.002 + 0.865 \times \text{MSR} + 0.112\end{aligned}$$

By taking the USR as the dependent variable as per the change in the ISR during the event period, the linear regression line shows the intercept value of -0.002, beta coefficient as the slope of the line is 0.865. Due to the lower value of e and higher value R^2 , statistically the relationship seems as significant.

Similarly,

By taking the USR as a dependent variable and the EXR as the independent variable, the following regression is expressed;

$$\begin{aligned}\text{USR} &= a + b \times \text{EXR} + e, \\ &= 0.002 - 0.1186 \times \text{EXR} + 0.424\end{aligned}$$

By taking the USR as the dependent variable as per the change in the EXR, the linear regression line shows the intercept value of 0.002, beta coefficient as the slope of the line is -0.118. Due to the higher value of e and higher value R^2 , statistically the relationship seems as significant. That means the returns of US stock market is better explained by Mexican market and the exchange rate return.

6.1 US stock market Russia stock market

Country and no. of events	Variables	Mean or Average	Std. Error	S.D.	C.V.	Range	Maximum	Minimum
Russia (79)								
	USR	0.019618	0.0066	0.05854	2.984	0.3219	0.1662	-0.1557
	RSR	0.0536	0.0115	0.10248	1.912	0.527	0.3566	-0.1705
	EXR	-0.01524	0.0016	0.0139	0.91207	-0.0628	-0.002	-0.063

Table 1.11

During the 14 years period, the dollar depreciated about 79 times and appreciated about 89 times in Russia. The average of the total depreciation events is -1.52%. Average dispersion around the mean of the currency devaluation is 1.39 %. The relative percentage volatility on the devaluation is 91.207%. The magnitude of the events, which is measured relative to the dollar, has the variation, ranging from the low of -6.3% to a high of -0.2%. The range of fluctuation is 6.28%. The standard error on the forecasting mean is about 0.16%.

Average monthly return of the US stock market is about 1.96% with the standard deviation of 5.85% and with coefficient of variation of 298.4%. U.S. stock return has the variation, ranging from the low of -15.57% to a high of 16.66%. Therefore, the value of range of the fluctuation is 32.19%. The standard error on the forecasting mean return of US is about 0.66%.

At the same time stock market of Russia is going with 5.36% monthly average returns and 10.25% standard deviation with coefficient of variation of 191.2%. Mexican stock return has the variation, ranging from the low of -17.05% to a high of -32.66%. The standard error on the forecasting mean return of Japanese stock market is about 1.15%.

This study shows that during these events, the performance of the US stock market was poor than the stock market of Russia. In other words, during these periods, investing in US stock market is riskier than stock market of Greece. Hence, if the currency is expected to depreciate, the investors are looking to invest in stock market of Russia than in stock market of US.

6.2 Regression analysis of US stock market returns (USR), Russia stock market returns (RSR) in case of dollar depreciation.

Country	Alpha(α)	Beta(β)	Error Term(e)	R ²	R	P value
RSR	0.007(0.286)	0.228(0)	0.06	0.16	0.4	0
EXR	0.00079(0.99)	-1.29(0.006)	0.457	0.094	0.307	0.006

Table 1.12

In this study, stock market returns are analyzed as per the change in the currency returns and the stock market return of another country. So, the following equation is used to explain the linear relationship between the variables.

$$\begin{aligned}\text{USR} &= a + b \times \text{MSR} + e, \\ &= 0.007 + 0.228 \times \text{RSR} + 0.06\end{aligned}$$

By taking the USR as the dependent variable as per the change in the RSR during the event period, the linear regression line shows the intercept value of 0.007, beta coefficient as the slope of the line is 0.228. Due to the lower value of e and lower value p , statistically the relationship seems as significant.

Similarly,

By taking the USR as a dependent variable and the EXR as the independent variable, the following regression is expressed;

$$\begin{aligned}\text{USR} &= a + b \times \text{EXR} + e, \\ &= 0.00079 - 1.29 \times \text{EXR} + 0.457\end{aligned}$$

By taking the USR as the dependent variable as per the change in the EXR, the linear regression line shows the intercept value of 0.00079, beta coefficient as the slope of the line is -1.29. Due to the lower value of p , statistically the relationship seems as significant. That means the returns of US stock market is better explained by exchange rate returns, stock market and other economic factors. However, Asperm1989) shares an opposing view that the variations could be better explained by the international market index.

4.3 SUMMARY OF THE ANALYSIS

Country and no. of events	Variables	Mean or Average	Std. Error	S.D.	C.V.	Range	Maximum	Minimum
Brazil(85)	USR	-0.0276	0.0431	0.39702	-14.3848	4.3589	0.80045	-3.5585
	BSR	0.059153	0.0019	0.01784	0.30159	0.2153	0.0605	-0.1548
	EXR	-0.0289	0.00244	0.2246	0.7781	0.1180	0.00083	-0.1188
China(91)	USR	0.00048	0.0067	0.0643	13395	0.3525	0.1234	-0.2290
	CSR	0.01281	0.0091	0.869	67.21	0.4926	0.2245	-0.2181
	EXR	-0.00365	0.00045	0.0043	1.178	-0.0218	-0.0016	-0.0202
Greece(98)	USR	0.01105	0.007	0.0707	6.39819	0.44209	0.19195	-0.229
	GSR	0.00828	0.0085	0.08456	10.21256	0.4586	0.21929	-0.239
	EXR	-0.0198	0.00204	0.02015	-1.01768	-13175	-0.04685	-0.0849
India(88)	USR	0.0158	0.0062	0.0583	3.84321	0.2793	0.1345	-0.1448
	ISR	0.03204	0.0017	0.0696	2.17228	0.0817	0.0005	-0.0812

	EXR	-0.0127	0.0073 4	0.0156 2	-1.2299	-0.4339	-0.2826	-0.1513
Mexico (88)	USR	0.019558	0.0071	0.0665	3.40014	0.421	0.192	-0.229
	MSR	0.025331	0.0052 5	0.0492 7	1.9450	0.2478	0.1318	-0.116
	EXR	-0.15524	0.0017	-0.0162	0.1049	-0.1176	-0.0447	-0.0747
Russia (79)	USR	0.019618	0.0066	0.0585 4	2.984	0.3219	0.1662	-0.1557
	RSR	0.0536	0.0115	0.1024 8	1.912	0.527	0.3566	-0.1705
	EXR	-0.01524	0.0016	0.0139	0.91207	-0.0628	-0.002	-0.063

Table 1.1 Refer to appendix 1.1

By comparing the mean or average return, standard deviation (absolute measure of risk), coefficient of variation (relative measure of risk) and range of the variation, we measure the performance of domestic and foreign stock market returns during the period of currency depreciation. Average return of the stock market of Brazil, China, Mexico and Russia are higher than that of the stock market of the US along with comparatively lower standard deviation. So, the coefficient of the variation of these countries is lower than coefficient of the variation US. Asperm (1989) findings say that the possible reasons for the variation could be better explained by an international index. This study reveals that, during the period of dollar depreciation, foreign stock markets are performing better than the stock market of US. But only Greece has lower performance than the US stock market because they have lower mean and comparatively higher coefficient of variation. Nleh and Lee(2002) findings relates to the performance of Greece where his results suggested that the currency depreciation shared a negative relation with the returns of the market. Similarly, Fangs (2001) findings also support the result of Greece performance that the currency depreciation shared a negative relation.

By analyzing the correlation coefficient, relationships between the countries seem to be varying. Relationship between the US stock market and Brazil, Mexico stock market is highly positive. Among them relationship between Brazil is almost perfectly positive while others being

strongly positive. The remaining countries Greece, India, has moderate positivity. China and Russia have lower positive correlation. Rowenhorst 's (1994) from his findings suggest that the possible reason for China and Russia to have lower positive correlation could be due to country specific source of variation. There are significant changes in variation as observed from the result. The findings of Aggarwal, Inclan and Leal (1999) suggest that the changes in variation is highly dependent on the country and data frequency where it says more points were observed with using daily data's than the monthly data.

SUMMARY

$$R(Y) = a + b x + e,$$

Country	Alpha(α)	Beta(β)	Error Term(e)	R ²	R	P value
BSR	0.101(0)	21.819(0.534)	0.481	0.961	0.98	0
EXR	-0.024(0.294)	0.117(0.952).	1.94	0	0.007	0.952
CSR	-0.002(0.81)	0.167(0.032)	0.076	0.051	0.032	0.077
EXR	-0.007(0.452)	-1.967(0.219))	1.589	0.017	0.13	0.219
GSR	0.008(0.223)	0.386(0)	0.076	0.213	0.461	0
EXR	0.006(0.556)	-0.257(0.474)	0.357	0.002	0.042	0.63
ISR	0(0.915)	0.492(0)	0.073	0.338	0.588	0
EXR	0.003(0.712)	-0.966(0.015)	0.389	0.067	0.259	0.015
MSR	-0.002(0.704)	0.865(0)	0.112	0.41	0.64	0
EXR	0.002(0.82)	-0.118(0.01)	0.424	0.075	0.274	0.01
RSR	0.007(0.286)	0.228(0)	0.06	0.16	0.4	0
EXR	0.00079(0.99)	-1.29(0.006)	0.457	0.094	0.307	0.006

Table 1.2

In case of regression line, two regression models are analyzed. US market return as dependent variable and foreign stock market returns as independent variable, the first line tries to show the linear relationship between US market return and foreign stock returns. As per the model,

regression line between the US market return and stock return of Brazil, Greece, India, Mexico, Russia shows the significant results. Error terms of these lines are lower and the P value is lower (less than 0.05). That means the regression line and the data seems statistically significant. But the linear relationships between the remaining countries are not significant because error term and p value is higher (i.e. p value is higher than 0.05).

In case of regression line, two regression models are analyzed. US market return as dependent variable and depreciated foreign exchange rate as independent variable, the first line tries to show the linear relationship between US market return and foreign exchange rate. As per the model, regression line between the US market return and exchange rate of India, Mexico and Russia shows the significant results. Error terms of these lines are lower and the P value is lower (less than 0.05). That means the regression line and the data seems statistically significant. But the linear relationships between the remaining countries are not significant because error term and p value is higher (i.e. p value is higher than 0.05).

From the regression analysis, exchange rate risk becomes conditional and time varying with the inception of floating exchange rate. That means in some cases there is internal impact the in some cases there is external impacts.

CHAPTER 5

5.1 CONCLUSION

It is a known fact that large and relatively discrete currency movements is not an uncommon event in the emerging markets as emerging markets are best known for involving high risk .It is generally found that high risk gives higher returns. These markets are growing rapidly as it is believed to give higher returns to its investors. This is one of the main reason why investors are ready to take the risk. Significant differences of devaluation and

depreciation was discussed and further linked to other aspects. Although there are differences of devaluation being an official tool and depreciation being an unofficial tool, it is important to know that they are significant in terms of sharing the values in terms of currency against another depending on the demand and supply of money. The literature has shown some differences of the effect of devaluation but their intended to do same that is depreciate the value of money. However, the trade balance gives an overview of the country's economy in terms of their trade which is highly important for investors to know their economy before making an investment. The changes in the currency creates an impact on the trade balance where the currency takes time to adjust to goods being traded. However, the literature shares contradicting views on whether changes in currency tends to improve trade balance. A J-Curve effect better explains the trade balance as it reflects the movement of trade over time. Although there are many factors that can affect the returns of the market, the exchange rate factor did not seem to be significant to explain the relationship with the foreign market. However, other macroeconomic factors could better explain the relationship with other markets.

Further to conclude the results, the researcher uses the statistical and regression analysis to assess the returns of the domestic and the US markets following the changes in the exchange rate returns in the presence of dollar depreciation. The tests were performed on six emerging markets over the period of 2000 to 2013. The statistical data concludes that the depreciation in the dollar currency had a positive impact on the returns of five domestic markets out of which Greece had a negative impact. Further, the volatility in the exchange rate positively correlates with stock market return volatility. Thus, the regression model explains that the stock market returns volatility seem to be time varying, neglecting possible time varying volatility of the depreciated currency. From the regression analysis, it can be observed that the exchange rate risk becomes conditional and time varying with the inception of floating exchange rate. That means in some cases there is similar impact and sometimes differential impact. Over all, it can be

observed that the presence of other economic factors was highly needed to explain the relationships whether stock markets or exchange rates were capable of explaining the returns. Having US stock market as the dependent variable and other stock markets and exchange rates as independent variables, this research also highlighted that majority of the stock markets were better in explaining the returns of US than the exchange rate returns. This shows that the investors could use the stock market information to make investment considering the economic factors. Hence, this research suggest that the depreciation in currency leads to higher returns in the foreign country but gets lower returns where the currency has depreciated. Looking at the majority of countries receiving higher returns we can say that the dollar depreciation created a positive impact on the emerging stock market returns. Therefore, the US investors would prefer investing on the foreign markets and not the US market itself as investing in those markets would give them higher returns .

5.2 LIMITATION OF RESEARCH

The research has a number of limitations. The research could have been better explained if other economic indicators were used. Although the import and export relation was theoretically discussed in the research, the researcher did not use it as variables to explain the market returns due to data availability for the chosen time period. However, more than 11 countries were chosen in the beginning but only six were chosen as the research tend to become too large. The stock exchange index have been chosen on a random base and not through sector based. However, there is a possibility that the data's could have produced different result if specific sector indexes were chosen. This research assumed one market index of particular country representing the market of the whole country. Therefore, if other indexes were used it could have produced a different result. There are different sets of stock indexes that belongs to a country with the number

of companies on the list. Therefore, this research puts a limitation to just picking the stock index of the country which had the data available required for that period.

5.3 RECOMMENDATION

As observed from the findings, there were high returns in the US stock than that of Greece even during the dollar depreciation. From the research it was indicative that the other markets performed extremely well when the dollar depreciated. But the Greece market performing poorer during these events makes it worthwhile to study the behaviour of these changes in the returns. This raises an interesting view for future research that the variables might have played a major role to give these results. The use of other variables could have explained this behaviour of the stock market. Even though with lower returns in Greece, the results suggested that the market was chosen to be significant to explain the returns of US. This raises another point that the investors could still observe Greece market to be significant to explain the returns as suggested by the results. However, this shows that markets that perform low could still be considered better in explaining the other markets. The research resulted in terms of Greece can be further suggested to explore to get an idea of low returns could also be used as an useful indicator for the investors to make investments. Therefore, this research could have also been presented in terms of domestic currency returns which would have given a different scenario. However, this research could be further explored changing scenarios and this it could produce varying results if chosen to do so. Moreover, this research could also be observed using different methods other than the linear regression model.

For investors this research suggests that when making investment decisions they should consider studying the value and stability of the domestic currency in the market especially emerging markets as they are more prone to unseen risk. Use other various econometric models to forecast the

economic condition. Explore different variables to observe the relationship even better and to get better results.

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7.1 APPENDICES

APPENDICE 1.1

Descriptive Statistics							
	N	Range	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
BSR2	89	.2153	-.1548	.0605	-.005688	.0018512	.0174641

CSR1	91	.4926	-.2181	.2745	.012815	.0091063	.0868685
ESR2	89	.1180	-.1188	-.0008	-.028064	.0023663	.0223241
EXR1	91	.0218	-.0202	.0016	-.003655	.0004456	.0042510
EXR3	88	.0817	-.0812	.0005	-.012714	.0016648	.0156172
EXR4	88	.1187	-.0740	.0447	-.015524	.0017365	.0162894
EXR5	79	.0628	-.0630	-.0002	-.015239	.0015644	.0139047
EXR6	79	.0628	-.0630	-.0002	-.015239	.0015644	.0139047
GSR6	98	.1318	-.0849	.0468	-.019842	.0020360	.0201555
ISR3	88	.4339	-.1513	.2826	.032040	.0074225	.0696292
MSR4	88	.2478	-.1160	.1318	.025331	.0052524	.0492723
RSR5	79	.5270	-.1705	.3566	.053603	.0115301	.1024818
USR1	91	.3525	-.2290	.1234	.000488	.0067361	.0642580
USR2	88	4.3589	-3.5585	.8004	-.038056	.0430333	.4036881
USR3	88	.2793	-.1448	.1345	.015179	.0062194	.0583432
USR4	87	.3790	-.2290	.1500	.017577	.0068899	.0642644
USR5	88	.1187	-.0740	.0447	-.015524	.0017365	.0162894
USR6	98	.4210	-.2290	.1920	.011046	.0071429	.0707114
Valid N (listwise)	79						

APPENDIX 1.2

$$R(Y) = a + b x + e,$$

Country	Alpha(α)	Beta(β)	Error Term(e)	R ²	R	P value
BSR	0.101(0)	21.819(0.534)	0.481	0.961	0.98	0
EXR	-0.024(0.294)	0.117(0.952).	1.94	0	0.007	0.952
CSR	-0.002(0.81)	0.167(0.032)	0.076	0.051	0.032	0.077
EXR	-0.007(0.452)	-1.967(0.219))	1.589	0.017	0.13	0.219
GSR	0.008(0.223)	0.386(0)	0.076	0.213	0.461	0
EXR	0.006(0.556)	-0.257(0.474)	0.357	0.002	0.042	0.63
ISR	0(0.915)	0.492(0)	0.073	0.338	0.588	0
EXR	0.003(0.712)	-0.966(0.015)	0.389	0.067	0.259	0.015
MSR	-0.002(0.704)	0.865(0)	0.112	0.41	0.64	0
EXR	0.002(0.82)	-0.118(0.01)	0.424	0.075	0.274	0.01
RSR	0.007(0.286)	0.228(0)	0.06	0.16	0.4	0
EXR	0.00079(0.99)	-1.29(0.006)	0.457	0.094	0.307	0.006

Table 1.2

There were almost 24 sets of table two for each analysis one with stock return and another with exchange rate return compared to the US stock market. Therefore, data's has been turned into a summary sheet and the 24 tables of the regression analysis have not been presented.